DOCUMENT RESUME

ED 107 630 SP 009 255

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TITLE A Comparison of Participant Performance and Attitudes in Two Teacher Preparation Patterns.
INSTITUTION Washington Univ., Seattle. Coll. of Education.
PUB DATE Mar 75
NOTE 51p.

EDRS PRICE MF-$0.76 HC-$3.32 PLUS POSTAGE
DESCRIPTORS Academic Achievement; Comparative Analysis; Course Evaluation; Evaluation Methods; *Student Teaching; Teacher Attitudes; *Teacher Education; *Teacher Education Curriculum; *Teacher Evaluation
IDENTIFIERS *Washington University

ABSTRACT

This report evaluates the effectiveness of two teacher preparation patterns. Pattern A students take specified professional coursework followed by a one-quarter, full-time teaching practicum. Pattern B Students spend multiple quarters in a classroom under guidance while engaged in professional coursework. A formal assessment of teaching performance and attitudes of participants included (a) internal evaluations which examined a pattern in terms of its own stated objectives; and (b) external evaluations which compared a pattern with some outside criterion. Internal evaluations so far have taken the form of individual research projects and dissertations by graduate students. In order to obtain information pertinent to an external examination of both preparation patterns, a questionnaire was employed to evaluate all students in both programs. Based on a five-point scale, the instrument measured 11 categories of teaching effectiveness. The categories can be broadly grouped as follows: (a) professional and personal, (b) instructional preparation, (c) instructional implementation, and (d) instructional evaluation. (The study offers a section on each of the following: (a) description of the evaluation; (b) review of related studies; (c) data analysis; and (d) summary, conclusions, and recommendations. References, and appendixes including samples of the evaluation instruments, are included.) (JS)

ED107630

A COMPARISON OF PARTICIPANT PERFORMANCE AND ATTITUDES IN TWO TEACHER PREPARATION PATTERNS

UNIVERSITY OF WASHINGTON

COLLEGE OF EDUCATION

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March, 1975

-SP010 235

ACKNOWLEDGEMENT

This report is dedicated in memory of our late colleague, Professor Jack E. Kittell, who passed away on January 19, 1975. His interest and concern for quality teacher education were manifested in all of his work. His insightful leadership was instrumental in making this study possible.

The Committee is grateful for the opportunity afforded it to participate in this pioneering evaluation effort with such an inspiring colleague.

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CHAPTER I

DESCRIPTION OF THE EVALUATION

Introduction

The University of Washington College of Education currently provides two major patterns in the Teacher Certification Program. Each of these meets identical certification requirements, emphasizes a common set of performance objectives, and applies the same performance criteria for evaluating its certification candidates. However, the two patterns differ considerably in structure and sequence.

Pattern A is characterized by specified professional coursework followed by a one-quarter, full-time teaching practicum (student teaching) under the direction of a field associate (classroom) teacher and a university field coordinator (supervisor). The elementary level produces generalists, kindergarten through grade six, specialized to some extent by students at the point of practicum participation. The secondary level, by its very nature, produces specialists since students elect a subject matter field(s) for their teaching practicum and certification emphasis.

In contrast to the Pattern A arrangement, Pattern B students (interns) spend multiple quarters in a classroom under the guidance of clinical professors, field associate teachers, and university field coordinators while engaged in professional coursework. For elementary level interns, involvement in the classroom ranges from half a day during the first quarter to a full-time teaching practicum in the third quarter. Secondary level

interns participate similarly over a two quarter sequence.[1] Clinical professors and teaching assistants from campus, university field coordinators, and field associate teachers work together, in classrooms and in a weekly seminar, to plan and implement activities that will help interns become effective teachers. The intent is to immerse interns in teaching practices early by relating information and conceptual input obtained through the on-campus Clinic with practicum experiences in the classroom. The Clinic emphasizes the themes of prescribing learning experiences, developing criterion teaching behaviors for implementing learning experiences, and evaluating outcomes. An important aspect of the Clinic is use of self-instructional packets, thus allowing for varying rates of progress by Pattern B interns.[2]

To better examine the effectiveness of these two preparation arrangements, the Committee for Evaluation of Teacher Education Patterns conducted a formal assessment of teaching performance and attitudes of pattern participants. Possible designs for this purpose include (1) internal evaluations representing those which attempt to examine a pattern in terms of its own stated objectives, and (2) external evaluations representing those which attempt to compare a pattern with some outside criterion. Basically, the Committee undertook an external evaluation, comparing Pattern A with Pattern B participants. In recent years, internal evaluations of these patterns have taken the form of (1) individual research projects by professors of education at the University of Washington,

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[1] Commencing Autumn Quarter, 1974, Pattern B elementary level will require four quarters and secondary level will require three quarters of sequenced field experiences.

[2] See Appendix A for a list of critical differences between Pattern A and Pattern B elementary level preparation experiences.

and (2) dissertations by university graduate students. Selected research studies appear in Chapter II of this report.

Evaluation Questions

To obtain information pertinent to an external examination of the two preparation patterns the Committee established the following evaluation questions:

Evaluation Question 1: Are there differences in teaching performance between Pattern A and Pattern B certification candidates?

Evaluation Question 2: Are there differences in attitude toward the value of their preparation experiences between Pattern A and Pattern B certification candidates?

Evaluation Question 3: Are there differences in teaching performance between Pattern A and Pattern B graduates, after one year of teaching experience?

Evaluation Question 4: Are there differences in attitude toward the value of their preparation experiences between Pattern A and Pattern B graduates, after one year of teaching experience?

The Committee considered these questions crucial for obtaining information concerning the relative standing of certification candidates and graduates from each pattern in terms of teaching performance and attitude toward their preparation experiences.

Dependent Measures

Dependent measures for evaluation questions 1 and 3 represent teaching performance data obtained through use of the University of Washington Performance-Based Evaluation Instrument (PBEI) developed by Dr. Norma M.

Dimmitt and the field experience faculty, University of Washington (Appendix B). Based on a five point scale, the instrument measures eleven categories of teaching performance that group logically into four general areas of teaching effectiveness: (1) professional and personal, (2) instructional preparation, (3) instructional implementation, (4) instructional evaluation.

Employed in its present form since Autumn 1972 to evaluate all students in both preparation patterns, this instrument provides the official teaching performance record for certification and employment purposes. Using the specified performance criteria, each candidate's field associate teacher and university field coordinator jointly complete formative evaluations periodically throughout the field experience, with a summative evaluation completed after the full-time teaching practicum.

Petery (1974) established the inter-rater reliability of the PBEI at .67. The instrument also exhibits content validity, as the four areas of teaching performance it measures are compatible with characteristics included in numerous teacher evaluation instruments (Simon and Boyer, 1967).

Dependent measures for evaluation questions 2 and 4 represent attitude data obtained from a questionnaire that includes thirty-five criteria of teaching performance associated with the four areas and eleven categories of the PBEI (Appendix C). Upon completion of the full-time teaching practicum, certification candidates in both preparation patterns voluntarily complete the three-section questionnaire. Section I measures participant attitudes toward how well they were prepared to demonstrate the specified performance criteria.

Initially, Sections I and III were not designed to measure one general teaching competence or attitude. However, the thirty-five performance criteria, randomly ordered on the questionnaire, can be logically regrouped into the same four areas of teaching included on the PBEI to obtain general measures of participant perceptions of teaching effectiveness and attitudes toward their preparation experiences.

To establish statistical validity for grouping the eleven categories of the PBEI as well as the thirty-five criteria of the questionnaire into the four PBEI general areas of teaching effectiveness, a principal axes factor analysis with a procrustean transformation was performed separately for each instrument on data obtained from students completing certification during 1972-73.

Transformed factor loadings for the PBEI appear in Appendix D with loadings for the attitude questionnaire shown in Appendix E. Inspection of these loadings indicates that the eleven performance categories appear to measure five factors or traits, one general factor and four others which correspond roughly to the four logical teaching performance areas of the PBEI. The thirty-five criteria of the questionnaire appear to measure the same five factors.

Performance measures from the PBEI and attitude measures from the questionnaire have been stored since Autumn 1972, forming a computer data bank for the two preparation patterns. Therefore, data for evaluation questions 1 and 2 already existed, necessitating only collection of post-certification data related to questions 3 and 4 in conducting the evaluation study.

Based upon these factor analyses results, the Evaluation Committee decided to use factor scores corresponding to each of the five factors for each instrument as dependent measures for examining the four evaluation questions. In this report, factor scores for questions 1 and 3 represent:

1. Overall teaching competence
2. Professional and personal competence
3. Instructional preparation competence
4. Instructional implementation competence
5. Instructional evaluation competence

Factor scores for evaluation questions 2 and 4 represent:

1. Overall attitude toward preparation experiences
2. Attitude toward preparation for professional and personal competence
3. Attitude toward preparation for instructional preparation competence
4. Attitude toward preparation for instructional implementation competence
5. Attitude toward preparation for instructional evaluation competence

A secondary data source for examining evaluation questions 2 and 4 measures how well participants valued the following components of the total Teacher Certification Program:

1. Courses for distribution requirements (Natural Science, Humanities, Social Science)
2. Courses for the academic major and minor (if applicable)
3. Courses in professional education (Learning Psychology-Evaluation in Teaching)

4. Courses in professional education (Speech for Teachers)
5. Course(s) in teaching methodology (e.g., Teaching of Reading, Teaching of English, etc.)
6. The teaching practicum
7. Field associate teacher
8. Principal and staff in assigned building
9. University field coordinator
10. Field experience seminars
11. Field experience handbook

Considering the nature and content of these components, the Committee assumed them to be independent of each other. Therefore, each component became a dependent attitude measure for examining evaluation questions 2 and 4.

Evaluation Design

Evaluation of the two preparation patterns required four sets of statistical analysis, each set consisting of t tests on dependent measures applicable to each evaluation question. Schematically, the design for the evaluation study follows:

GROUP	TREATMENT	OBSERVATION I	OBSERVATION II
PATTERN A	X_1	O_1	O_2
PATTERN B	X_2	O_1	O_2

Procedures

In a limited sense, this evaluation effort represents a longitudinal study of the two teacher education patterns, because data were obtained

on the same participants at two different points in time. Pre-certification data, collected on candidates completing the teaching practicum during 1972-73, served to answer evaluation questions 1 and 2. Post-certification data, collected during Spring 1974, after one year of teaching experience, provided information for answering evaluation questions 3 and 4.

TABLE 1.0

RETURNS FROM POST-CERTIFICATION

CANDIDATES AND BUILDING PRINCIPALS

	Subjects		
Total Return	$\frac{123}{327}$	=	Percent of Return 37.6%
Pattern A Return	$\frac{85}{247}$	=	34.4%
Pattern B Return	$\frac{38}{80}$	=	47.5%
	Principals		
Total Return	$\frac{81}{327}$	=	Percent of Return 24.7%
Pattern A Return	$\frac{53}{247}$	=	21.5%
Pattern B Return	$\frac{28}{80}$	=	35.0%

The Committee assumed that the return of questionnaires and performance ratings represented similar subsets within the two patterns. That is, the same type of subjects from each pattern would be apt to return the questionnaires and allow themselves to be evaluated by their building principals.

While the post-certification data represent a modest percentage of respondents from that population, the Evaluation Committee considered the return a very positive response in this pioneering effort to evaluate graduates of the two preparation patterns.

Pre-certification data consisted of (1) the final teaching performance evaluation for each candidate, rated on the PBEI by the field associate teacher and university field coordinator, and (2) candidate responses to Sections II and III of the questionnaire designed to measure attitudes toward their preparation experiences. These same instruments, administered by mail to a sub-sample of 1972-73 graduates after one year of teaching experience, provided post-certification data. Participants completed the attitude questionnaires and the school principals used the PBEI to rate their teaching effectiveness.

Sample

Throughout this evaluation study, all data for each pattern represent the combined responses of elementary and secondary level participants. Pre-certification data came from 653 students for whom both performance and attitude measures existed, representing almost three-fourths of the 900 students who completed certification requirements in the two patterns during 1972-73. Of the 653 subjects, 560 came from Pattern A and 93 from Pattern B.

Post-certification data represent a sub-sample of the 653 students who provided pre-certification data. Unfortunately current addresses for only 327 of the pre-certification candidates could be located. Of these, 247 subjects came from Pattern A and 80 from Pattern B.

Returns of post-certification data questionnaires received from graduates and PBEI ratings received from principals, by preparation pattern, appear in Table 1.0.

Limitations

Certain limiting aspects of the evaluation study could not be avoided. First and perhaps foremost, participants were not randomly assigned to the two teacher preparation patterns because students elect to participate in either pattern. Consequently any differences between patterns might have resulted from initial differences between subjects. That is, differences might be due to more able students selecting one pattern over the other. This, of course, could be considered an asset for the selected pattern. From a practical point of view, however, self-selection can be considered part of the two treatments.

Considering this lack of random assignment, the evaluation study at best was "pre-experimental," being closest in design to what Campbell and Stanley (1963) term the "static-group comparison." Threats to internal validity of this design are selection and mortality. Selection has been discussed previously. Mortality was not considered a major threat to the study since it was assumed that no one pattern would lose proportionately more or less participants than the other pattern.

Finally, the Committee focused deliberately and exclusively on evaluating the teaching performance and attitudes of pre-certification candidates and graduates of the two preparation patterns. No attempt was made by the Committee to consider other variables related to the total Teacher Certification Program or to identify relationships between results of the study and any other variable(s). This emphasis limits conclusions which might be drawn from the evaluation study results.

CHAPTER II

REVIEW OF RELATED STUDIES

Evaluations of Pattern A and Pattern B completed in recent years attempted to determine how well a given pattern fulfilled its stated goals and objectives. In this report, such evaluations have been termed internal.

In a doctoral dissertation, Brochtrup (1974) explored the relationship between specific non-verbal behaviors of candidates for elementary level certification and the variables of teaching effectiveness and attitude toward teaching. The relationship between non-verbal behavior and these independent variables was of interest as all elementary Pattern B interns have at least one preparation experience in the use of non-verbal techniques to improve their teaching performance. Each intern also may elect additional preparation in classroom use of non-verbal behavior by planning and teaching a lesson involving non-verbal techniques. Brochtrup used Pattern A as the control group, consequently adding an external evaluative aspect to his investigation.

Twenty subjects from each of the two patterns were selected for the study. Subjects from Pattern A consisted of student teachers assigned to elementary classrooms in the Northshore, Shoreline, and Seattle Public School Districts. Likewise, elementary Pattern B interns were selected from the same districts. Three instruments were used to collect the data: (1) a researcher-prepared scale for recording positive and negative examples of specific non-verbal behaviors exhibited by the subjects, (2) the University of Washington Performance-Based Evaluation Instrument (PBEI) used for assessing teaching effectiveness, and (3) the Merwin and DiVesta "Attitude Toward Teaching as a Career" scale.

Students from both patterns were observed during their full-time teaching practicum and rated, using the three data collection instruments. While the positive correlation between non-verbal behavior and teaching effectiveness did not reach the .05 level of significance, there was a distinct tendency for students receiving higher teaching effectiveness ratings to exhibit more positive non-verbal behavior, particularly in head movement and vocal quality, than exhibited by students receiving lower effectiveness ratings. It was also found that Pattern B interns who elected to teach lessons involving non-verbal techniques exhibited more positive non-verbal behavior than interns who did not choose to do so. Likewise, interns in Pattern B tended to employ more net positive non-verbal behaviors in the classroom than students in Pattern A.

In a dissertation, Petery (1974) focused on establishing the inter-rater reliability of the University of Washington PBEI. Within the same study, Petery compared the performance of Pattern B elementary and secondary level interns. Although part of the same preparation pattern, training experiences for the two levels differ in one important aspect. Secondary teachers are prepared as specialists in a selected subject area, requiring considerable depth in an academic major. Coursework in teaching methodology is limited to the subject area and generic skills of teaching. While students at the elementary level also need an academic major, their professional preparation experiences emphasize teaching methodology in a number of subject areas.

Petery used thirty secondary interns and thirty elementary interns from Pattern B for her study. Using the University of Washington PBEI, subjects were rated on teaching effectiveness. Performance of elementary level interns on the eleven performance categories measured by the PBEI was significantly higher than that of secondary level interns. Compared to secondary subjects, elementary subjects were rated as more competent (.01 level of significance) in their ability to demonstrate academic preparation, diagnose learner characteristics, develop instructional objectives, organize instruction to achieve objectives, facilitate instructional objectives, promote instructional interaction, evaluate achievement of objectives, and use evaluation results. Elementary interns were rated as more competent (.05 level of significance) than their secondary counterparts in their ability to manage the learning environment, and exhibit personal attributes.

Petery examined the findings from two perspectives. She stated that if the ratings are accepted at face value, then there may be actual differences between the teaching ability of elementary and secondary level interns from Pattern B. It was suggested that the better performance of elementary interns may have resulted from more extensive background in teaching principles and methods. However, Petery also suggested that the rating instrument may be biased toward elementary candidates and that equally competent secondary level interns are rated lower because of some characteristic of the instrument. For example, most of the performance categories and criteria on the instrument are learner oriented rather than subject oriented. If it may be correctly assumed that elementary

level candidates tend to be more learner oriented, then perhaps the instrument categories are biased in favor of elementary level teaching candidates. However, if learner orientation is an important aspect of teaching competence, this characteristic of the instrument becomes a measure of competence rather than a bias.

CHAPTER III

ANALYSIS OF THE DATA

The purpose of this chapter is threefold. First, data collected during 1972-73 on students completing the teacher preparation program, termed pre-certification data, are analyzed and the findings reported. Then, post-certification data obtained during Spring Quarter 1974 from 72-73 graduates with one year of teaching experience are analyzed and reported. Finally, the factor analysis of the University of Washington Performance-Based Evaluation Instrument (PBEI) is discussed in some detail. The Evaluation Committee considered inclusion of this third section essential as the PBEI constitutes such an integral part of the Teacher Certification Program.

Analysis of Pre-Certification Data

Pre-certification data represent 653 students from the two teacher preparation patterns. Of these, 560 came from Pattern A and 93 from Pattern B. Data obtained from these students applied to evaluation questions 1 and 2. *Evaluation Question 1: Are there differences in teaching performance between Pattern A and Pattern B certification candidates?*

This question was examined by analyzing the five dependent measures of teaching competence (factor scores) described in Chapter I. As established in that discussion, dependent measures were obtained by factor analyzing the eleven teaching performance categories included on the PBEI. Importance of each measure can be determined by examining loadings for the eleven categories (items) on each factor (Appendix D). A study of these loadings indicates that the "strongest" measure definitely is the first factor -- overall teaching competence. All eleven categories

obtained very high loadings on that factor. Hence, factor scores for certification candidates on the first measure were considered fairly pure indications of overall teaching competence. The other four factors were not nearly as strong. The amount of total variance for which each factor accounted, shown in the following information, indicates that the general factor controlled more variance than the combination of all other factors.

Factor	Amount of Total Variance
1. Overall teaching competence	51%
2. Professional and personal competence	8%
3. Instructional preparation competence	8%
4. Instructional implementation competence	8%
5. Instructional evaluation competence	5%

A summary of the t tests on differences between mean factor scores for Pattern A and Pattern B certification candidates on the five competency factors appears in Table 3.1. Note that the reported factor scores represent an inverse relationship; that is, lower mean factor scores indicate higher ratings of teaching competence.

TABLE 3.1

SUMMARY OF t RATIOS
FOR PATTERN A AND PATTERN B CERTIFICATION CANDIDATES
OBTAINED FROM MEAN FACTOR SCORES ON THE PBEI

Factor	Pattern A (N259)		Pattern B (N42)		Ratio
	Mean	SD	Mean	SD	
1.	.0874	1.0735	-.4251	.8037	2.9606**
2.	.0418	.9762	.0121	.8962	.1849
3.	-.0089	.9339	-.1432	.9273	.8653
4.	-.0023	.9790	.2421	1.0863	-1.4775
5.	.0348	1.0102	.0589	1.0504	- .1426

* .05 level of significance
** .01 level of significance

As shown in Table 3.1, Pattern B certification candidates were rated significantly higher (lower mean factor scores) than Pattern A candidates in overall teaching competence. No other comparison produced significant differences.

Evaluation Question 2: Are there differences in attitude toward the value of their preparation experiences between Pattern A and Pattern B certification candidates?

The five measures of attitude toward the value of their preparation experiences, describe in Chapter I, were used to answer this question. As discussed in that chapter, attitude measures were obtained by factor analyzing certification candidate responses to 35 performance criteria (items) of the attitude questionnaire, rotating the obtained factors to fit the five factors established from the PBEI as closely as possible, and then calculating factor scores for each certification candidate. The resulting factors (Appendix E) accounted for the following amounts of total variance:

Factor	Amount of Total Variance
1. Overall attitude toward preparation	41%
2. Attitude toward preparation for professional and personal competence	4%
3. Attitude toward preparation for instructional preparation competence	7%
4. Attitude toward preparation for instructional implementation competence	7%
5. Attitude toward preparation for instructional evaluation competence	4%

A summary of t tests on differences between mean factor scores for Pattern A and Pattern B certification candidates on the five attitude measures appears in Table 3.2. Note that the reported factor scores represent an inverse relationship; that is, more positive attitudes toward preparation experiences.

TABLE 3.2

SUMMARY OF t RATIOS
FOR PATTERN A AND PATTERN B CERTIFICATION CANDIDATES
OBTAINED FROM MEAN FACTOR SCORES ON THE ATTITUDE QUESTIONNAIRE

Factor	Pattern A (432)		Pattern B (81)		Ratio
	Mean	SD	Mean	SD	
1.	.0408	.9706	-.1479	1.0997	1.5712
2.	-.0113	.9548	.1341	1.0976	-1.2272
3.	.0101	.9968	-.1574	1.1301	1.3578
4.	.0411	1.0151	-.0772	.9856	.9668
5.	.0160	.9769	-.0453	1.0240	.5160

* .05 level of significance
** .01 level of significance

Comparisons summarized in Table 2.3 produced no significant differences between attitudes of Pattern A and Pattern B certification candidates toward their preparation experiences.

As described in Chapter I, a secondary data source for answering evaluation question 2 measured attitudes of certification candidates toward the effectiveness of eleven components in their total teacher certification program. Due to the nature and content of these components, identified below, they were assumed to be independent attitude measures.

1. Courses for distribution requirements (Natural Science, Humanities, Social Science)
2. Courses for the academic major (and minor if applicable)
3. Courses in professional education (Learning Psychology-Evaluation in Teaching)
4. Courses in professional education (Speech for Teachers)
5. Course(s) in teaching methodology (e.g., Teaching of Reading, Teaching of English, etc.)
6. The teaching practicum
7. Field associate teacher
8. Principal and staff in assigned building
9. University field coordinator
10. Field experience seminars
11. Field experience handbook

Mean attitude scores for certification candidates from the two patterns were compared on each certification program component. The t ratios for differences between Pattern A and Pattern B attitude means are shown in Table 3.3. Note that lower mean scores indicate more positive attitudes toward components of the Teacher Certification Program.

TABLE 3.3

SUMMARY OF t RATIOS
FOR PATTERN A AND PATTERN B CERTIFICATION CANDIDATES OBTAINED FROM MEAN SCORES OF ATTITUDE TOWARD PREPARATION COMPONENTS

Component	Pattern A (N560)		Pattern B (N 93)		t Ratios
	Mean	SD	Mean	SD	
1.	2.3357	1.0556	2.3118	1.1130	.2006
2.	1.9304	.9288	2.2151	1.2055	-2.6139**
3.	2.5946	.9120	2.6882	.9998	.9038
4.	2.8696	1.3019	3.3198	1.4340	-1.8262
5.	2.4804	1.0681	2.6129	1.0838	-1.1055
6.	1.5375	.8701	1.2903	.8154	2.5593*
7.	1.5500	.8756	1.4301	.8772	1.2226
8.	2.1982	1.1054	2.1935	1.1445	.0378
9.	1.8250	.9020	1.6774	1.0443	1.4274
10.	2.5161	1.0132	2.2151	1.0920	2.6233**
11.	3.0786	1.2833	3.0108	1.2291	.4746

* .05 level of significance

** .01 level of significance

Examination of mean scores summarized in Table 3.3 indicates that Pattern A certification candidates had a significantly more positive attitude toward the value of coursework in the academic major than Pattern B certification candidates (lower mean scores). However, Pattern B candidates were significantly more positive toward the value of the teaching practicum and field experience seminars. No other comparisons produced significant differences.

Analysis of Post-Certification Data

Post-certification data were obtained on a sub-sample of the 653 certification candidates who provided pre-data after one year of teaching experience, in order to answer research questions 3 and 4. Unfortunately, addresses of all graduates could not be obtained. In all, 327 post-certification subjects were sent a copy of the attitude questionnaire (Appendix B), to be completed by the graduates, and a copy of the PBEI (Appendix A), to be completed by their principals. Distribution of returned attitude questionnaires and teaching evaluations, classified by preparation pattern, appears in Table 1.0, Chapter I.

Evaluation Question 3: Are there differences in teaching performance between Pattern A and Pattern B graduates after one year of teaching experience?

An assumption was made that the eleven performance categories of the PBEI measured the same traits, when used to collect data on pre-certification candidates, as when used to collect data on graduates of the preparation patterns. Therefore, factor weights calculated on pre-certification candidates were used to obtain factor scores for each graduate on the following measures of teaching competence.

Factor

1. Overall teaching competence
2. Professional and personal competence
3. Instructional preparation competence
4. Instructional implementation competence
5. Instructional evaluation competence

A summary of t tests on differences between mean factor scores for Pattern A and Pattern B graduates on the five competency factors appears in Table 3.4. As indicated previously, lower factor scores indicate higher ratings of teaching competence.

TABLE 3.4
SUMMARY OF t RATIOS
FOR PATTERN A AND PATTERN B GRADUATES
OBTAINED FROM MEAN FACTOR SCORES ON THE PBEI

Factor	Pattern A (50)		Pattern B (25)		t Ratios
	Mean	SD	Mean	SD	
1.	.4219	.9941	.0441	.9393	1.5796
2.	.0527	1.0560	.1040	.9022	-.2078
3.	.3734	.9767	.3095	.8514	.2783
4.	.4188	1.1194	-.2060	.7560	2.5145*
5.	.6567	1.1529	.1857	1.0009	1.7398

* .05 level of significance
** .01 level of significance

Comparisons shown in Table 3.4 establish that Pattern B graduates were rated significantly higher (lower mean factor scores) than Pattern A graduates on instructional implementation competence. No other comparisons were significant.

Evaluation Question 4: Are there differences in attitude toward the value of their preparation experiences between Pattern A and Pattern B graduates after one year of teaching experience?

Factor weights calculated on pre-certification candidates were used to obtain factor scores for each graduate on the following measures of attitude toward the value of their preparation experiences.

Factor

1. Overall attitude toward preparation experiences
2. Attitude toward preparation for professional and personal competence
3. Attitude toward preparation for instructional preparation competence
4. Attitude toward preparation for instructional implementation competence
5. Attitude toward preparation for instructional evaluation competence

A summary of t tests on differences between mean factor scores for Pattern A and Pattern B graduates on the five attitude factors appears in Table 3.5. Again, lower factor scores represent a more positive attitude toward the preparation experiences.

TABLE 3.5
SUMMARY OF t RATIOS
FOR PATTERN A AND PATTERN B GRADUATES
OBTAINED FROM MEAN FACTOR SCORES ON THE ATTITUDE QUESTIONNAIRE

Factor	Pattern A (N 63)		Pattern B (N 32)		t Ratio
	Mean	SD	Mean	SD	
1.	.4384	.8871	.2894	.9922	.7433
2.	-.3135	.8384	-.1961	.8197	-.6499
3.	-.0340	1.0150	-.0504	1.1845	.0703
4.	.0447	.9891	-.3355	.7982	1.8836
5.	-.0458	1.0209	.1332	1.1008	-.7631

* .05 level of significance

** .01 level of significance

Comparisons of mean factor scores shown in Table 3.5 produced no significant differences. It should be noted, however, that the t Ratio for differences in attitude toward preparation for instructional implementation competence did reach the .10 level of significance, with Pattern B graduates holding more positive attitudes than Pattern A graduates.

As with research question 2, a secondary data source measured attitudes of graduates toward the effectiveness of the following eleven components of the total Teacher Certification Program. These eleven components were assumed to be independent attitude measures.

1. Courses for distribution requirements (Natural Science, Humanities, Social Science)
2. Courses for the academic major (and minor if applicable)
3. Courses in professional education (Learning Psychology-Evaluation in Teaching)
4. Courses in professional education (Speech for Teachers)
5. Course(s) in teaching methodology (e.g., Teaching of Reading, Teaching of English, etc.)
6. The teaching practicum
7. Field associate teacher
8. Principal and staff in assigned building
9. University field coordinator
10. Field experience seminars
11. Field experience handbook

Mean attitude scores for graduates from the two patterns were compared on each certification program component. The t ratios for differences between Pattern A and Pattern B attitude means are summarized in Table 3.6. As with the pre-certification candidate analysis, lower mean scores indicate more positive attitudes toward components of the Teacher Certification Program.

TABLE 3.6

SUMMARY OF t RATIOS

FOR PATTERN A AND PATTERN B GRADUATES OBTAINED FROM

MEAN SCORES OF ATTITUDE TOWARD PREPARATION COMPONENTS

Component	Pattern A (N63)		Pattern B (N32)		t Ratio
	Mean	SD	Mean	SD	
1.	2.2794	.878	2.3947	1.175	-.53
2.	1.8955	.819	1.9737	1.052	-.40
3.	2.5000	.749	2.5526	.860	-.31
4.	2.7761	1.165	3.2895	1.228	-2.10*
5.	2.6324	1.006	2.3158	.933	1.63
6.	1.6029	.602	1.3421	.534	2.30*
7.	1.5373	.785	1.3947	.718	.94
8.	2.0303	.960	2.1316	.935	-.53
9.	2.2879	.989	1.7632	.913	2.47**
10.	2.8750	1.091	2.2895	.956	2.84**
11.	3.2000	1.117	3.1143	1.132	.36

* .05 level of significance

** .01 level of significance

Examination of mean scores summarized in Table 3.6 indicates that Pattern A graduates had a significantly more positive attitude toward the value of coursework in speech than Pattern B graduates. However, Pattern B graduates were significantly more positive toward the value of the teaching practicum, university field coordinators, and field experience seminars than Pattern A graduates.

Factor Analysis of the University of Washington Performance-Based Evaluation Instrument (PBEI)

The purpose of the factor analysis was to determine the extent to which the eleven categories of teaching performance included on the PBEI measure the four logical subdivisions established as areas of performance on the instrument, namely:

1. Professional and personal competence
2. Instructional preparation competence
3. Instructional implementation competence
4. Instructional evaluation competence

A principal component factor analysis of the PBEI produced the loadings presented in Appendix F. A study of those factor loadings indicates that the eleven categories of teaching performance definitely measure one general factor, that is, the first factor alone accounts for 64.1 percent of the total variance. Strength of the first factor is confirmed by observing that variance on the eleven teaching performance categories accounts for only 36.9 percent of what is uniquely measured by the PBEI categories or their associated performance criteria. Theoretically, if the instrument does measure four specified areas of teaching, variance on the categories not controlled by the general factor should be accounted for by four unique

factors.

Examination of eigenvalues and percentages of variance produced by this principal component factor analysis suggests that each unique factor is relatively unimportant when compared to the general factor. That is, there are no factors, other than the first, that account for enough variance to be considered meaningful.

In a further attempt to determine the existence of the four logical performance areas of the PBEI, an orthogonal Procrustean transfromation was performed on factor loadings obtained from the principal component factor analysis. The particular type of Procrustean transformation used (developed by Schonemann, Psychometrica, 1966, 31, 1-16) had certain advantages that lent themselves to the problem at hand.

1. The precise type of factor structure desired could be specified.
2. It was possible to specify the loadings on only some of the transformed factors, leaving the other factors free to vary. This is accomplished by inserting zeroes for loadings on those factors that are not of experimental interest (in this case six factors) and then performing the rotation on all (eleven) factors. For a detailed discussion of this procedure, see Mulaik (The Foundations of Factor Analysis, 1972, p. 294.)

Based on the above rationale, a target matrix specified one general factor and four factors that correspond to the four logical performance areas of the PBEI (Appendix G).

The target matrix can be interpreted as the ideal factor loadings that would be expected if the instrument actually does measure:

1. A general factor (Factor I -- that trait commonly measured by all categories of the PBEI)
2. Professional and personal ability (Factor III -- that trait measured uniquely by PBEI categories 1, 2 and 3)
3. Instructional preparation (Factor V -- that trait measured uniquely by PBEI categories 4, 5 and 6)

4. Instructional implementation (Factor II -- that trait measured uniquely by PBEI categories 7, 8 and 9)

5. Instructional evaluation (Factor IV -- that trait measured uniquely by PBEI categories 10 and 11)

The Procrustean transformation attempted to transform linearly the loadings produced in the principal component factor analysis to fit the ideal loadings specified in the target matrix. The transformation produced factor loadings employed to obtain factor scores utilized throughout this evaluation report (Appendix D.)

According to Harman (1970, p. 359) a good indicator of the "importance" of a set of items, in terms of how much they contribute to the measurement of a given factor, is the total contribution of that set of items to the variance of the computed factor. In this case, PBEI categories 7, 8, 9 accounted for 78 percent of the variance of Factor II; PBEI categories 1, 2, 3 accounted for 84 percent of the variance of Factor III; PBEI categories 9, 10 accounted for 85 percent of the variance of Factor IV; PBEI categories 4, 5, 6 accounted for 78 percent of the variance of Factor V.

The factor analysis of the University of Washington Performance-Based Evaluation Instrument (PBEI) resulted in three conclusions:

1. The eleven performance categories of the PBEI do measure some common trait, specified as Overall Teaching Competence in this evaluation report.

2. Factor loadings for the performance categories of PBEI can be linearly transformed to produce factors that correspond to the general factor and four unique factors roughly equivalent to the four logical performance areas of the instrument.

3. The small amounts of variance accounted for by the four factors corresponding to the logical areas of teaching permitted only limited interpretation of measures of those factors in this evaluation report.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains three sections. First, results of analyses on the four evaluation questions are summarized, followed by conclusions which these results substantiate. The last section includes recommendations for program development and evaluation suggested by the results.

Summary

The University of Washington College of Education currently provides two major patterns in the Teacher Certification Program, elementary and secondary levels. Each pattern is unique in its structure and sequence. To better understand the effectiveness of these patterns the Committee for Evaluation of Teacher Education Patterns conducted a formal examination of teaching performance and attitudes of pattern participants. This evaluation effort was external in nature, in that Pattern A and Pattern B participants were compared with each other (1) when candidates completed certification requirements, and (2) as graduates with one year of teaching experience.

The Committee considered the following evaluation questions crucial to obtaining information about the relative standing of certification candidates and graduates from each pattern in terms of teaching competence and attitude toward their preparation experiences.

EVALUATION QUESTION 1: Are there differences in teaching performance between Pattern A and Pattern B certification candidates?

EVALUATION QUESTION 2: Are there differences in attitude toward the value of their preparation experiences between Pattern A and Pattern B certification candidates?

EVALUATION QUESTION 3: Are there differences in teaching performance between Pattern A and Pattern B graduates, after one year of teaching experience?

EVALUATION QUESTION 4: Are there differences in attitudes toward the value of their experiences between Pattern A and Pattern B graduates, after one year of teaching experience?

A total of 42 t tests were completed to answer the four evaluation questions, five each for questions 1 and 3 and sixteen each for questions 2 and 4. Of the 42 analyses, nine produced significant results. Distribution of significant t ratios among the four evaluation questions follows:

EVALUATION QUESTION	SIGNIFICANT t RATIOS
Q_1	1
Q_2	3
Q_3	1
Q_4	4

Comparison of means of the two preparation patterns on the nine t ratios that produced significant results established the following:

Significant Pattern A Comparisons

EVALUATION QUESTION 2: Pattern A certification candidates were significantly more positive (.01 level) than Pattern B candidates toward the value in the Teacher Certification Program of coursework for the academic major.

EVALUATION QUESTION 4: Pattern A graduates were significantly more positive (.05 level) than Pattern B graduates toward the value in the Teacher Certification Program of coursework in speech for the teacher.

Significant Pattern B Comparisons

EVALUATION QUESTION 1: Pattern B certification candidates were rated significantly better (.05 level) than Pattern A candidates on overall teaching competence.

EVALUATION QUESTION 2: Pattern B certification candidates were significantly more positive than Pattern A candidates toward the value in the Teacher Certification Program of the teaching practicum (.05 level), and seminars associated with their field experiences (.01 level).

EVALUATION QUESTION 3: Pattern B graduates were rated significantly higher (.05 level) than Pattern A graduates on instructional implementation competence.

EVALUATION QUESTION 4: Pattern B graduates were significantly more positive than Pattern A candidates toward the value in the Teacher Certification Program of the teaching practicum (.05 level), University field coordinators (.01 level), and field experience seminars (.01 level)

Conclusions

Although the study had some severe limitations and the results some definite qualifications, the Committee concluded that the evaluation study provided some useful information for determining the relative effectiveness of the two teacher preparation patterns.

Results of the evaluation appear to favor Pattern B, both in participant attitudes toward the value of preparation experiences and in ratings of their teaching competence. The strongest evidence for Pattern B participant teaching superiority results from analyses conducted on the general teaching competence factor for pre-certification candidates. The number of subjects was large; the instrument reliable (as indicated by

the Petery study); the general factor was a good indicator of overall teaching competence (as indicated by the factor analysis). This superiority was evident also in the follow-up study, where Pattern B graduates were rated as more competent than Pattern A graduates in implementing instruction in the classroom.

Pattern B certification candidates also were more positive than Pattern A candidates toward the value of the teaching practicum and the seminar associated with their field experience. Pattern B showed a significantly poorer attitude than Pattern A on only two measures. Certification candidates in Pattern A were more positive toward the value of courses taken for the academic major.

In the follow-up study, Pattern A graduates were significantly more positive toward the value of coursework in speech than Pattern B graduates. However, Pattern B graduates held a significantly more positive attitude toward the value of the teaching practicum, University field coordinators, and field experience seminars than Pattern A graduates.

In general then, it was concluded that Pattern B participants placed higher value on their preparation experiences and were rated higher on teaching competence than Pattern A participants. A study of the appendices indicates that, even where results were not statistically significant, Pattern B means generally were better than Pattern A means.

This is not to say that results for Pattern A were poor. On the contrary, subject responses for both patterns generally ranged from adequate to excellent, both in terms of attitudes toward the preparation experiences and ratings of teaching competence.

Clearly, then, certification candidates from both patterns held positive attitudes toward their preparation for teaching and demonstrated competence in classroom instruction.

Recommendations

Based on conclusions substantiated by this evaluation study, the Committee for Evaluation of Teacher Education Patterns recommends that the following actions for program development and evaluation be taken.

RECOMMENDATION 1: The evaluation study, with some modifications should be replicated on 1973-74 certification candidates who held teaching positions during 1974-75.

Modifications should include:

a. Separate analyses should be conducted for the elementary and secondary teacher preparation levels.

b. Attitudes toward the preparation patterns reported after one year of teaching should be compared with attitudes reported upon completion of the certification program.

c. Another factor analysis of the instruments used to obtain dependent measures for the evaluation study should be made and the obtained factor scores utilized in the replicated evaluation study.

RECOMMENDATION 2: Additional internal evaluation and research studies of the teacher preparation patterns should be conducted. Areas of investigation should focus on needs identified within the particular patterns. These might include:

a. Impact of number and length of field coordinator observations.

b. Impact of supervisory training experiences for field associate teachers.

c. Relationship between the amount of field experience and amount of clinic experience.

RECOMMENDATION 3: Doctoral students interested in teacher education should be involved actively in program development and evaluation, with their dissertations focusing on needs identified through this involvement.

RECOMMENDATION 4: Attitudes that support participation in follow-up evaluation studies for program development purposes should be fostered in certification candidates.

RECOMMENDATION 5: Additional sources of information for measuring teaching performance should be explored.

RECOMMENDATION 6: Evaluation of teacher education patterns should be expanded to include examination of the program management dimension.

APPENDIX A

PATTERN A AND PATTERN B PREPARATION PATTERNS

(Critical Features -- Elementary Level)

PATTERN A	PATTERN B
1. Students selected on basis of meeting University of Washington academic criteria	1. Students selected on basis of meeting University of Washington academic criteria, electing Pattern B, and completing a successful interview with field personnel.
2. No special recruitment	2. Recruitment of students representing a variety of ethnic groups.
3. No established sequence of professional courses	3. Block of time schedule with reserved sections of professional courses
4. Random order of methods instruction	4. Clinic faculty sequence and coordinate methods instruction
5. Letter grades for methods courses	5. CR/NC grading of methods courses
6. Field experience courses evaluated on meeting performance criteria, with CR/NC grading	6. Field experience courses evaluated on meeting performance criteria, with CR/NC grading
7. Methods instruction isolated from specific field experience	7. Methods instruction integrated with concurrent field experiences.
8. One quarter full-time field experience (400 hours) required	8. Three quarters of field experience, one full time (800 hours) required.

9. Classroom assignment decision rarely involves student and field associate teacher	9. Intern matched with field associate teacher, based on interaction and discussion prior to assignment decision
10. Field associate teacher has contact with Education faculty only through field coordinator	10. Field associate teacher has direct contact with Clinic faculty
11. Student teacher works with University field coordinator for only one quarter	11. Intern works with university field coordinator for entire three-quarter field experience
12. Field coordinator often has part-time appointment, with responsibility only to the university	12. Field coordinator generally has full-time appointment with responsibility to school district and university
13. Weekly seminars conducted by field coordinators	13. Weekly seminars conducted by Clinic faculty, and field coordinators.
14. Classroom observations made by two different kinds of professional educators	14. Classroom observations made by four different kinds of professional educators
15. Minimum of four formal observations of teaching performance	15. Minimum of fourteen formal observation of teaching performance

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[1] Commencing Autumn Quarter 1974 these distinguishing features no longer will be totally applicable. New selection criteria and procedures will be employed for admission of all candidates to the Teacher Certification Program. In addition, all elementary level candidates will participate in a four-quarter Pattern B block; secondary level students may elect either Pattern A or a three-quarter Pattern B block.

APPENDIX B

Name of Person Being Evaluated_____

Title of Evaluator_____

UNIVERSITY OF WASHINGTON PERFORMANCE-BASED EVALUATION INSTRUMENT

PROFESSIONAL AND PERSONAL CRITERIA

I. Exhibits Professional Qualifications A B C D E

demonstrates genuine enthusiasm for teaching
relates positively with faculty and staff
assumes teaching and extra-class tasks responsibly
strives to improve teaching competence

II. Demonstrates Academic Preparation A B C D E

demonstrates specific knowledge of subject(s) being taught
understands structure and sequence of subject development
applies general knowledge related to subject(s) being taught
uses English correctly in classroom communication

III. Exhibits Personal Attributes A B C D E

demonstrates positive interpersonal relationships with learners
displays initiative in assuming teaching tasks
utilizes well-modulated, clearly articulated speaking voice
exhibits confidence when teaching

INSTRUCTIONAL PREPARATION CRITERIA

IV. Diagnoses Learner Characteristics A B C D E

recognizes abilities, handicaps and interests of learners
interprets formal and informal feedback from learner behavior
considers present performance level of learners
recognizes individual and group learning difficulties

V. Develops Instructional Objectives A B C D E

develops valid unit and lesson objectives for learners and subject
prescribes specific, measurable learner outcomes in lesson objectives
modifies expected outcomes for individual and group differences
communicates objectives and their importance to learners

VI. Organizes Instruction to Achieve Objectives A B C D E

prescribes appropriate teaching strategies and learner activities
designates introductory, concluding and evaluating procedures
utilizes a variety of human, material and environmental resources
anticipates the need for alternative strategies and activities

INSTRUCTIONAL IMPLEMENTATION CRITERIA

VII. Manages Learning Environment — A B C D E

enforces effective regulations in managing learning activities
establishes workable approach(es) for controlling learning disruptions
maintains a physical atmosphere which is conducive to learning
organizes efficient use of instructional materials and equipment

VIII. Facilitates Instructional Objectives — A B C D E

establishes motivation specific for learners and subject
paces instruction flexibly, in terms of feedback from learner behavior
modifies strategies and activities to facilitate learner achievement
summarizes to reinforce learning and achieve closure

IX. Promotes Instructional Interaction — A B C D E

involves learners in active classroom participation
stimulates learner questions, responses and discussions
promotes positive peer group interaction
capitalizes on unexpected interaction and learning opportunities

INSTRUCTIONAL EVALUATION CRITERIA

X. Evaluates Achievement of Objectives — A B C D E

assess learner achievement of objectives
recognizes what facilitated or restricted learner achievement
evaluates learner achievement by formal and informal procedures
encourages learners to assess their own achievement

XI. Uses Evaluation Results — A B C D E

guides subsequent instruction in terms of learner achievement
encourages learners to apply new knowledge and skills
evaluates teaching effectiveness in terms of learner achievement
modifies teaching behaviors which restrict learner achievement

APPENDIX C

UNIVERSITY OF WASHINGTON

TEACHER ATTITUDE QUESTIONNAIRE

Directions

1. Use pencil to mark all responses being sure to completely blacken the space provided on your answer sheet.

2. Print your name, as directed, on the answer sheet and blacken the appropriate boxes.

3. Complete the date.

4. If you recall your ASUW number, fill in the appropriate blanks. If you cannot recall your ASUW number, omit this item.

5. Complete the two column portion labeled "Section" as follows: (a) In the left column, mark the box of your teacher certification pattern, (b) In the right column, mark the area/level of your present field assignment. If you function in more than one area or level, use the one that represents your major teaching assignment.

Left Column	Right Column
A. Regular Pattern (1 qtr. practicum)	A. Early Childhood/Primary
B. TEPFO Pattern (extended practicum)	B. Intermediate/Middle (Elem. prep)
C. Indian Education Pattern	C. Language Arts, Secondary
D. Special Education Pattern	D. Social Studies, Secondary
E. Communication Disorders Spec. Pattern	E. Science, Secondary
F. K-12 Specialist Pattern	F. Math, Secondary
G. Teacher Corps Pattern	G. Foreign Language, Secondary
	H. Business Education, Secondary
	I. Industrial Arts, Secondary
	J. Physical Education/Health, Secondary
	K. Home Economics, Secondary
	L. Art, Secondary or K-12 Specialist
	M. Music, Secondary or K-12 Specialist

6. Complete Sections I, II and III as directed.

7. When you have completed the questionnaire, please put the questionnaire, the answer sheet and the directions into the pre-addressed envelope and mail as soon as possible. You will note that postage has already been provided.

TEACHER ATTITUDE QUESTIONNAIRE

SECTION I

Using Section I, responses I-35 of your answer sheet, indicate how well you are able to demonstrate each of the following performance criteria, applying the following scale:

A — Outstanding performance level
B — Excellent performance level
C — Good performance level
D — Weak performance level
E -- Unsatisfactory performance level

Section I — Section III

1. Recognize individual and group learning difficulties 81
2. Communicate objectives and their importance to learners 82
3. Anticipate the need for alternative strategies and activities 83
4. Organize efficient use of instructional materials and equipment 84
5. Summarize to reinforce learning and achieve closure. 85

6. Capitalize on unexpected interaction and learning opportunities 86
7. Encourage learners to assess their own achievement 87
8. Use English correctly in classroom communication 88
9. Understand structure and sequence of subject development 89
10. Modify expected outcomes for individual and group differences 90

11. Demonstrate positive interpersonal relationships with learners 91
12. Recognize abilities, handicaps, and interests of learners 92
13. Develop valid unit and lesson objectives for learners and subjects 93
14. Prescribe appropriate teaching strategies and learner activities 94
15. Enforce effective regulations in managing learning activities 95

16. Establish motivation specific for learners and subject 96
17. Involve learners in active classroom participation 97
18. Assess learner achievement of objectives 98
19. Guide subsequent instruction in terms of learner achievement 99
20. Encourage learners to apply new knowledge and skills 100

21. Recognize what facilitated or restricted learner achievement 101
22. Stimulate learner questions, responses, and discussions 102
23. Pace instruction flexibly, in terms of feedback from learner behavior . . . 103
24. Establish workable approach(es) for controlling learner disruptions 104
25. Designate introductory, concluding and evaluating procedures 105

26. Evaluate learner achievement by formal and informal procedures 106
27. Promote positive peer group interaction 107
28. Modify strategies and activities to facilitate learner achievement 108
29. Maintain a physical atmosphere which is conducive to learning 109
30. Utilize a variety of human, material and environmental resources 110

31. Interpret formal and informal feedback from learner behavior 111
32. Prescribe specific, measurable learner outcomes in lesson objectives 112
33. Exhibit confidence when teaching 113
34. Utilize well-modulated, clearly articulated speaking voice 114
35. Apply general knowledge related to subject(s) being taught 115

SECTION II

Your preparation for teaching included four academic course areas plus the teaching practicum. In Section II of the answer sheet (41-46), indicate how well courses in each area prepared you for teaching, using the following scale:

A — Thoroughly
B — Adequately
C — Inadequately
D -- Not at all
E -- Does not apply

41. Courses for distribution requirements (Natural Science, Humanities, Social Science)
42. Courses for the academic major (and minor if applicable)
43. Courses in professional education (Ed. Psych. 304 & Evaluation, Ed. Psych. 308)
44. Courses in professional education (Speech for Teachers)
45. Course(s) in teaching methodology (e.g., Teaching of Reading, Tch. of English)
46. The teaching practicum

Using the same scale, indicate how well the following components contributed to your effectiveness in the teaching practicum (47-51).

47. Field associate teacher
48. Principal and staff in assigned building
49. University field coordinator
50. Seminars
51. Handbook

SECTION III

Refer again to the performance criteria in Section I. Using Section III, responses 81-115 of the answer sheet, indicate how well you <u>total</u> college education prepared you to demonstrate these criteria. (Although your responses in Section II may indicate that some course areas were more effective than others, consider your total preparation as <u>one entity</u> when responding to Section III.)

SECTION IV - OMIT

APPENDIX D

PROCRUSTEAN TRANSFORMED LOADINGS FOR THE 11 ITEMS OF THE UNIVERSITY OF WASHINGTON PERFORMANCE-BASED EVALUATION INSTRUMENT

		FACTORS										
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI
	1	.837	-.142	.379	-.026	-.025	.177	-.129	-.045	-.180	-.108	.201
	2	.579	.042	.521	.136	.269	-.192	-.104	.004	.502	-.028	.001
I	3	.649	.150	.550	.091	.166	.044	.263	.071	-.291	.169	-.170
T	4	.585	.264	.173	.198	.592	.077	-.222	-.297	-.128	-.011	-.091
E	5	.808	.041	-.009	.017	.418	-.066	-.090	.348	.054	-.007	-.184
M	6	.758	.098	.010	.039	.428	.026	.349	-.013	.111	.048	.304
S	7	.733	.438	.111	-.045	-.091	-.369	-.086	-.070	-.133	.246	.144
	8	.662	.496	.211	.133	.227	.321	-.075	.222	.104	.148	.107
	9	.695	.495	.175	.019	-.001	.068	.181	-.132	.049	-.365	-.223
	10	.798	.038	-.111	.467	.045	.120	.051	-.119	.156	.217	-.164
	11	.678	.258	.117	.543	.209	-.096	-.028	.142	-.134	-.198	.183
Eigenvalue		5.58	.87	.86	.60	.91	.35	.32	.32	.47	.35	.34
Percentage of Variance		50.7	7.9	7.8	5.5	8.3	3.2	2.9	2.9	4.3	3.2	3.1

APPENDIX E

PROCRUSTEAN TRANSFORMED LOADINGS

FOR THE 35 ITEMS OF THE

ATTITUDE QUESTIONNAIRE, SECTION III

		FACTORS										
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI
	1	.770	-.093	.232	.012	-.192	.198	-.108	.107	-.084	-.040	-.089
	2	.577	-.007	.545	.037	-.011	.229	.079	-.013	-.173	-.069	.001
	3	.655	.019	.368	.129	.045	.072	.045	.040	-.116	-.294	-.187
	4	.581	.203	.432	.207	-.076	.001	.205	.122	.163	-.145	-.065
	5	.567	.088	.308	.193	.103	.272	.452	.158	.017	-.162	.133
	6	.677	-.045	.073	.208	.074	.172	-.045	.301	-.229	-.284	.004
	7	.638	-.017	.099	.212	.300	.058	-.084	.391	-.231	-.194	.052
I	8	.485	.696	.002	-.052	.104	.063	-.058	.180	-.219	.195	-.035
T	9	.591	.354	.149	-.143	.074	-.154	.324	.207	.102	.232	-.277
E	10	.690	.032	.185	.239	.243	-.034	-.117	.073	-.105	-.059	-.319
M	11	.621	.220	.082	.307	-.019	.297	-.240	.103	.334	.009	-.157
S	12	.713	.072	.236	.157	.018	.277	-.186	.025	.253	.048	-.140
	13	.315	.076	.706	.250	.169	-.188	-.059	-.094	-.034	.030	-.101
	14	.587	.074	.456	.277	.129	-.233	.069	.046	-.022	.060	-.071
	15	.566	.058	.185	.634	.044	-.054	.069	.088	-.114	.197	-.148
	16	.593	.129	.283	.424	.236	.093	-.065	.124	.044	.029	.057
	17	.547	.165	.308	.413	.384	.078	-.036	.087	.178	-.066	.010
	18	.578	.029	.378	.072	.511	.061	.082	-.200	-.056	-.001	-.006
	19	.665	.086	.266	.209	.382	.105	.103	-.126	.009	.057	-.053
	20	.697	.072	.061	.340	.272	.011	.083	.156	.154	-.076	.052
	21	.762	-.022	.075	.206	.147	-.094	-.075	-.018	.180	.027	-.143
	22	.697	.082	.169	.298	.100	-.062	.048	.127	.151	-.028	.244
	23	.757	.045	.058	.330	.090	.001	.010	-.099	.062	.076	-.041
	24	.662	-.093	.055	.486	-.023	-.012	.110	-.090	-.187	.222	-.143
	25	.641	.015	.274	.231	.108	-.079	.302	-.021	-.001	.237	.269
	26	.696	-.079	.253	.000	.356	-.083	-.051	-.147	.002	.244	.155
	27	.709	.137	-.040	.363	.057	.010	-.150	-.204	.036	.002	.028
	28	.760	-.035	.134	.268	.170	-.087	.033	-.207	.055	-.051	-.010
	29	.695	.088	.089	.353	.028	-.039	-.078	-.148	-.056	.149	.167
	30	.613	.111	.330	.117	.042	-.306	-.254	.181	.151	.052	.339
	31	.757	.022	.153	.038	.232	.044	-.057	-.148	.149	.178	.163
	32	.459	.028	.578	.068	.294	-.147	-.065	-.249	.069	.125	.105
	33	.630	.375	-.014	.383	-.056	.070	.030	-.224	.013	-.131	.122
	34	.566	.508	.118	.183	-.108	.132	-.151	-.110	-.236	.109	.286
	35	.618	.391	.013	.005	.066	-.359	.145	-.107	.055	-.365	.111

APPENDIX F

PRINCIPAL COMPONENT FACTOR ANALYSIS OF THE ELEVEN CATEGORIES OF TEACHING COMPETENCE UNIVERSITY OF WASHINGTON PERFORMANCE-BASED EVALUATION INSTRUMENT

		FACTORS									
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI
	1	.783	.268	.299	-.246	-.208	.148	.131	-.174	-.019	-.057	.219
	2	.740	-.213	.474	.174	.346	.104	.098	.007	-.011	.095	-.056
	3	.803	.328	.180	.003	-.239	-.031	-.103	.275	-.023	.081	-.252
I	4	.803	-.165	-.049	.273	-.234	-.249	.285	.058	.201	.011	.096
T	5	.835	-.266	.067	-.096	.011	-.118	-.144	.108	-.095	-.403	.005
E	6	.826	-.180	-.001	-.222	-.003	-.096	-.289	-.191	.292	.136	-.057
M	7	.746	.387	-.196	-.169	.400	-.183	.143	.075	.078	-.034	.025
S	8	.854	-.030	-.094	.089	.008	-.168	-.189	.010	-.313	.216	.211
	9	.777	.247	-.169	.414	.039	.247	-.187	-.114	.093	-.126	.031
	10	.787	-.252	-.273	-.176	-.012	.364	.086	.246	.032	.085	.057
	11	.843	-.082	-.206	-.033	-.055	.014	.202	-.282	-.203	-.004	-.272
Eigenvalue		7.01	.64	.55	.46	.44	.37	.36	.32	.29	.27	.25
Percentage of Variance		64.1	5.8	5.0	4.2	4.0	3.4	3.3	2.9	2.6	2.5	2.3

APPENDIX G

TARGET MATRIX FOR THE UNIVERSITY OF WASHINGTON PERFORMANCE-BASED EVALUATION INSTRUMENT

	FACTORS										
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1	.700	.000	.700	.000	.000	.000	.000	.000	.000	.000	.000
2	.700	.000	.700	.000	.000	.000	.000	.000	.000	.000	.000
3	.700	.000	.700	.000	.000	.000	.000	.000	.000	.000	.000
4	.700	.000	.000	.000	.700	.000	.000	.000	.000	.000	.000
5	.700	.000	.000	.000	.700	.000	.000	.000	.000	.000	.000
6	.700	.000	.000	.000	.700	.000	.000	.000	.000	.000	.000
7	.700	.700	.000	.000	.000	.000	.000	.000	.000	.000	.000
8	.700	.700	.000	.000	.000	.000	.000	.000	.000	.000	.000
9	.700	.700	.000	.000	.000	.000	.000	.000	.000	.000	.000
10	.700	.000	.000	.700	.000	.000	.000	.000	.000	.000	.000
11	.700	.000	.000	.700	.000	.000	.000	.000	.000	.000	.000

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